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ABSTRACT

This computer literacy project, which was carried out with a group of fifth grade students, was designed to provide them with an enjoyable experience in learning about the computer through such activities as interactive programs, games, discussions, interviews, and field trips. Course content covered the history of computers, computer components, applications, flowcharting, and an introduction to programming. Student, parent, and staff surveys were conducted to determine the viability of the project. This project provided the basis for a computer literacy text, "My Friend the Computer," by Jean M. Rice. (RAO)

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# COMPUTER EDUCATION IN THE EDINA, MINNESOTA ELEMENTARY SCHOOLS

## PILOT PROJECT REPORT

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THIS PILOT PROJECT REPORT IS AN ANALYSIS OF THE RESULTS OF CLASSROOM TESTING OF THE BOOK, "MY FRIEND: THE COMPUTER," BY JEAN M. RICE, AS COMPILED AND SUBMITTED IN APRIL, 1975.

THIS NEW PROGRAM IS IN PRESS AND WILL BE RELEASED IN JANUARY, 1976 BY T. S. DENISON AND COMPANY, INC.

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# COMPUTER TECHNOLOGY FOR 5TH GRADERS

## INTRODUCTION

COMPUTER TECHNOLOGY FOR 5TH GRADERS? NO QUESTION ABOUT IT! THEIR ACCEPTANCE AND ENTHUSIASM FOR THE WORLD OF TECHNOLOGY WAS AMAZING AND STIMULATING.

THROUGH THE COOPERATION OF THE SCHOOL ADMINISTRATION, THE CURRICULUM COORDINATING COUNCIL AND THE STAFF OF HIGHLANDS ELEMENTARY SCHOOL, A VOLUNTEER INTRODUCTORY COMPUTER PILOT PROJECT WAS UNDERTAKEN IN FEBRUARY, 1975.

THE OBJECTIVES WERE TO PROVIDE THE STUDENTS AN ENJOYABLE EXPERIENCE IN LEARNING ABOUT THE COMPUTER (LITERACY, TECHNOLOGY, PROGRAMMING) AS WELL AS LEARNING HOW TO USE THE COMPUTER AS A TOOL.

EQUIPMENT FOR THE COURSE CONSISTED OF ONE COMPUTER TERMINAL WITH PAPER TAPE ATTACHMENT USED BOTH OFF-LINE (NOT HOOKED UP OVER TELEPHONE LINE TO A COMPUTER) AND ON-LINE TO A HEWLETT-PACKARD COMPUTER AT T.I.E.S. (TOTAL INFORMATION FOR EDUCATIONAL SYSTEMS) IN ROSEVILLE, MINNESOTA. INSTRUCTIONAL MATERIALS INCLUDED SIMULATION GAMES (SEE APPENDIX A) FROM THE T.I.E.S. LIBRARY, TEACHER-GENERATED PROGRAMS (SEE APPENDIX B), AS WELL AS TEACHER-GENERATED PROGRAMS USING HEWLETT PACKARD'S INSTRUCTIONAL DIALOGUE FACILITY (IDF) RELATING TO COMPUTER TERMINOLOGY. THESE SUPPLEMENTAL INSTRUCTIONAL PROGRAMS (IDF) CAN BE USED IN A VARIETY OF TEACHING-LEARNING SITUATIONS. IN THIS CASE THEY WERE USED FOR REINFORCEMENT OF ACQUIRED KNOWLEDGE. THE IDF LESSONS CONSISTED OF STUDENT-COMPUTER INTERACTION QUESTION AND ANSWER SESSIONS AT THE TERMINAL. SEE APPENDIX C.

THE CLASS MET FOR 12 SESSIONS OF 45 MINUTES EACH WITH EACH STUDENT HAVING ADDITIONAL INDIVIDUAL TIME AT THE TERMINAL SCHEDULED AT OTHER TIMES DURING THE SCHOOL DAY.

INSTRUCTION AND LEARNING TOOK PLACE IN A VARIETY OF MODES INCLUDING SHORT DISCUSSION SESSIONS ON VARIOUS ASPECTS OF A COMPUTER SYSTEM (EQUIPMENT, PROGRAMS, COMPUTER USAGES, PERSONNEL, ETC.); REINFORCEMENT OF THESE DISCUSSIONS USING THE IDF; PLAYING SIMULATION GAMES AT THE TERMINAL; INTERVIEWING PEOPLE WORKING WITH COMPUTERS; TAKING A FIELD TRIP TO A COMPUTER COMPANY; USING THE CATHODE RAY TUBE UNIT (ON-LINE TO T.I.E.S.) AT THE LOCAL LIBRARY FACILITY (HENNEPIN COUNTY LIBRARY) AND VIEWING A FILM ON THE HISTORY OF COMPUTERS.

OTHER ACTIVITIES THE STUDENTS TOOK PART IN WERE MAKING COMPUTER SCRAPBOOKS; MAKING PAPER TAPES; CODING MESSAGES IN AN 80-COLUMN CARD; COLLECTING NEWSPAPER AND MAGAZINE ARTICLES ON COMPUTERS; MAKING FLOW CHARTS; WRITING SHORT COMPUTER PROGRAMS IN BASIC AND WRITING COMPUTER BOOK REPORTS.

* * * * * * * * * * *

## Evaluations

In order to determine the viability of the project, all those affected by the program (students, parents, teachers, principal) were surveyed.

## Students

### Pre Course Survey

Prior to the start of the class, an interest questionnaire was sent home with 79 fifth grade students. Of the 86 percent return, 93 percent indicated a positive response to having a computer course.

Ten 5th grade students were chosen at random for the course by their teachers and included a variety of levels of learning ability. Since this was a pilot project to test numerous class activities with several levels of learning ability, the class was limited in size to a small number of students.

### Post Course Survey

Students were tested for acquisition of knowledge and surveyed for attitudes at their last class session. Breakdown of the final test scores revealed the following:

50 percent scored 90 - 100 percent
40 percent scored 70 - 90 percent
10 percent scored below 70 percent

The final test consisted of two parts--10 multiple choice questions and 10 matching (terms to definitions). Students were also given two optional exercises.

In the attitude survey to students, 17 course activities were rated for feelings according to the following scale: (See Appendix D.)

1. Bummer
2. Liked a little
3. Okay
4. Very good
5. Really great

Of the total activities, ratings of 4 or 5 were received in 92 percent of the cases. See Appendix E.

All of the students felt they knew more about the computer than before they took the course.

Each student rated the IDF lessons done at the terminal according to both importance and enjoyment on a scale from 1 to 5. Ratings of 4 or 5 were received in 93 percent of the cases in both importance and enjoyment.

Student concensus indicated they would like to spend more time at the terminal and requested a continuation of the class. They also asked to serve as student assistants in future beginning computer classes and will be doing so.

## Parents

Parents were surveyed to determine how they felt their child reacted to the course, if there seemed to be any problem areas for their child, which activities they felt their child particularly enjoyed, whether or not their child had mentioned the course at home and whether or not they felt the computer was important for children to learn about today.

The responses were extremely positive with no negative responses in any areas. A few feelings as to how their child felt about the course were "extremely enthusiastic, looking forward to it, excited, pleased, sadness when it was finished."

All responses indicated definite parental support and need for an instructional program of this nature. See Appendix F.

## Staff

Teachers were surveyed to determine what changes or modifications in the program might be necessary.

Two intermediate teachers (from whose classes the 10 students were chosen) responded to the questionnaire using a scale from 1 to 5 with 1 being the most negative response and 5 the most positive response.

Teachers generally felt there was little problem scheduling the students for individual computer time, with negligible disruption to their classroom activities. They also felt student enthusiasm for the course was high. See Appendix G.

The principal's survey indicated no major organizational problems and felt there was a need for computer exposure in the elementary school. See Appendix H.

* * * * * * * * * * *

## Conclusion

From the results of the student surveys and final exam, it is evident the students have become more literate in relating to the computer. The initial survey to students indicated a high level of interest with regard to a computer course. The final survey indicated this same high interest rate was carried throughout the course.

Parent and staff surveys supported the evidence of positive student attitudes toward the course.

Another elementary computer course will be offered during the 1975 Summer School as a continuation of the pilot project at Highlands. The class will be open to any 5th or 6th grade student in the district. Students from the Highlands computer class will serve as student assistants.

```
set-$bagels
run
BAGELS

WOULD YOU LIKE TO TRY BEGINNERS BAGELS(1) OR
ADVANCED BAGELS(2)?1
WOULD YOU LIKE THE RULES?yup
I AM THINKING OF A THREE DIGIT NUMBER.  YOU CAN GUESS WHAT
NUMBER I HAVE IN MIND AND I WILL TELL YOU:
PICO   - A CORRECT DIGIT BUT IN THE WRONG PLACE
FERMI  - ONE DIGIT IS IN THE CORRECT PLACE
BAGELS - NO DIGIT IS CORRECT
IF YOU HIT THE RETURN KEY WITHOUT A GUESS, I WILL TAKE IT TO
MEAN YOU WISH TO QUIT.
WHEN THE COMPUTER ASKS IF YOU WANT TO PLAY AGAIN
YOU MAY RESPOND WITH A Y(YES) OR N(NO)
OK-READY

PLYR #1 GSS # 1:123    BAGELS
PLYR #1 GSS # 2:456    BAGELS
PLYR #1 GSS # 3:789    PICO FERMI
PLYR #1 GSS # 4:798    PICO PICO
PLYR #1 GSS # 5:987    FERMI FERMI
PLYR #1 GSS # 6:978    PICO FERMI
PLYR #1 GSS # 7:879    PICO PICO
PLYR #1 GSS # 8:980

U GOT IT
```

```
get-c2
run
C2
```

APPENDIX B

```
WHAT IS YOUR FIRST NAME?
?Vlad
Vlad, HERE IS A SET OF QUESTIONS ABOUT THE PARTS OF
A COMPUTER.  ANSWER EACH QUESTION WITH THE NUMBER
IN FRONT OF THE FOLLOWING ANSWERS.

     1.  PROCESSING
     2.  MEMORY
     3.  ANALOG
     4.  CONTROL
     5.  DATA
     6.  DIGITAL
     7.  OUTPUT
     8.  PROGRAM
     9.  INPUT
    10.  ARITHMETIC

A SCALE IS AN EXAMPLE OF WHAT KIND OF COMPUTER?
?3
RIGHT ON!  QUESTION NUMBER 2 COMING UP.

THE SET OF INSTRUCTIONS THE COMPUTER USES WHICH
TELLS IT WHAT TO DO IS CALLED WHAT?
?8
GREAT.

WHAT IS ANOTHER NAME FOR THE DATA AND PROGRAM?
?9
HOORAY!

WHAT PART OF THE COMPUTER HAS 3 PARTS CALLED CONTROL,
ARITHMETIC, AND MEMORY?
?1
GOOD.

WHERE ARE THE DATA AND PROGRAMS STORED?
?2
EXCELLENT.

WHERE IS THE PROGRAM SOLVED IN THE COMPUTER?
?10
RIGHT ON.

WHICH UNIT IN THE PROCESSING UNIT DIRECTS THE
TRAFFIC IN THE COMPUTER?
?4
GREAT.

WHAT IS ANOTHER NAME FOR THE ANSWER FROM THE COMPUTER?
?7
RIGHT ON.

Vlad, YOU HAD  7    CORRECT AND  0    WRONG.

DONE
```

NOTE: UNDERLINED WORDS IN THE ABOVE PROGRAM REPRESENT RESPONSES TYPED IN BY THE PERSON AT THE TERMINAL.

LET US NOW TALK ABOUT THE HISTORY OF COMPUTERS.

IF THERE ARE ANY WORDS YOU DO NOT UNDERSTAND, PLEASE TYPE THE FOLLOWING AT ANY TIME AFTER THE COMPUTER HAS ASKED YOU TO GIVE IT AN ANSWER: //GO TO 5 THE COMPUTER WILL THEN EXPLAIN THE WORD YOU DO NOT UNDERSTAND.

MAN HAS ALWAYS USED A KIND OF DEVICE TO COUNT. EARLY MAN USED STONES AND PEBBLES. THE ANCIENT CHINESE USED A DEVICE CALLED AN ABACUS. THE FIRST MECHANICAL DEVICE WAS AN ADDING MACHINE.

( 1)WHAT WAS THE KIND OF COMPUTER CALLED THAT WAS USED BY THE PEOPLE OF CHINA?
PEBBLES
THAT WAS ONE OF THE EARLIEST WAYS OF COUNTING BUT NOT THE COMPUTER USED BY THE CHINESE. TRY AGAIN.
( 1)WHAT WAS THE KIND OF COMPUTER CALLED THAT WAS USED BY THE PEOPLE OF CHINA?
ABACUS
ABSOLUTELY CORRECT!

IN 1388 THE UNITED STATES GOVERNMENT HIRED HERMAN HOLLERITH TO HELP WITH THE CENSUS. DR. HOLLERITH INVENTED THE PUNCHED CARD. INFORMATION WAS PUNCHED INTO CARDS. MACHINES COULD THEN UNDERSTAND THE CARDS. USING THE CARDS INSTEAD OF DOING IT BY HAND SAVED THE GOVERNMENT TWO YEARS TIME.

( 2)WHAT WAS THE DEVICE DR. HOLLERITH INVENTED?
PUNCHED CARD
CORRECT

THE FIRST DIGITAL COMPUTER, WHICH WAS CALLED THE MARK 1, WAS COMPLETED IN 1944 BY A PROFESSOR AIKEN AT HARVARD UNIVERSITY AND PEOPLE FROM IBM. THE FIRST DIGITAL COMPUTER THAT WAS MANUFACTURED IN LARGE NUMBERS WAS THE UNIVAC 1.

( 3)WHAT WAS THE NAME OF THE FIRST DIGITAL COMPUTER?
MARK 1
EXCELLENT

WE TALK ABOUT GENERATIONS OF COMPUTERS IN THE SAME WAY WE TALK ABOUT GENERATIONS OF PEOPLE'S FAMILIES. THE FIRST GENERATION COMPUTERS WERE CONTROLLED BY VACUUM TUBES. THE COMPUTERS WERE BIG AND BULKY. TRANSISTORS CONTROLLED THE SECOND GENERATION COMPUTERS AND CIRCUITS CONTROL THE THIRD GENERATION.

( 4)WHAT KIND OF PARTS CONTROLLED THE FIRST GENERATION COMPUTERS?
VACUUM TUBES
RIGHT

END OF COURSE

APPENDIX D

## STUDENT QUESTIONNAIRE

1. HOW DO YOU FEEL ABOUT OUR COMPUTER CLASS ACTIVITIES? PLEASE RATE YOUR FEELINGS ACCORDING TO THE FOLLOWING SCALE: (MARK THE NUMBER OF YOUR RESPONSE ON THE LINE BEFORE EACH ITEM.)

| SCALE | EXAMPLE |
|---|---|
| 1. BUMMER | |
| 2. LIKED A LITTLE | 5 VACATION FROM SCHOOL |
| 3. OKAY | |
| 4. VERY GOOD | |
| 5. REALLY GREAT | |

___MAKING A PAPER TAPE
___LEARNING THE CODE OF A PUNCHED CARD
___MARKING A CODE IN A CARD
___USING THE TELETYPE TERMINAL
___DRAWING A PICTURE OF A COMPUTER
___LEARNING COMPUTER WORDS
___MAKING A COMPUTER SCRAP-BOOK
___WRITING A COMPUTER PROGRAM
___COLLECTING NEWSPAPER COMPUTER ARTICLES
___LEARNING ABOUT THE COMPUTER TERMINAL AT THE HENNEPIN COUNTY LIBRARY
___MAKING A FLOW CHART
___FIELD TRIP
___FILM-"THE MARVELOUS CALCULATOR"
___LEARNING HOW INFORMATION GOES INTO AND COMES OUT OF A COMPUTER

ANY OTHERS I'VE FORGOTTEN?_____

_____

2. IF YOU HAD THE CHANCE TO TAKE ANOTHER COMPUTER COURSE AND CHOSE TO DO SO, ARE THERE ANY OF THE ACTIVITIES LISTED ABOVE YOU WOULD LIKE TO STUDY FURTHER? IF SO, WHICH ONES?

_____

_____

3. HOW DID YOU FEEL ABOUT THE FOLLOWING COMPUTER COURSES YOU DID AT THE TERMINAL? PLEASE RATE YOUR 2 KINDS OF FEELINGS ACCORDING TO THE FOLLOWING SCALES: (MARK THE NUMBERS OF YOUR RESPONSES ON THE LINES FOLLOWING EACH COURSE.)

| IMPORTANCE | ENJOYMENT |
|---|---|
| 1. NOT IMPORTANT | 1. BUMMER |
| 2. A LITTLE IMPORTANT | 2. LIKED A LITTLE |
| 3. AVERAGE IMPORTANCE | 3. OKAY |
| 4. QUITE IMPORTANT | 4. VERY GOOD |
| 5. VERY IMPORTANT | 5. REALLY GREAT |

COMPUT _____ _____

HIST _____ _____

COMPU2 _____ _____

4. DO YOU FEEL YOU KNOW MORE ABOUT THE COMPUTER NOW THAN BEFORE THE COURSE? _____

5. IS THERE ANYTHING ELSE YOU WOULD LIKE TO TELL ME? (YOU MAY WRITE ON THE BACK OF THIS SHEET IF YOU DO NOT HAVE ENOUGH ROOM.)

8

## COMPUTER COURSE ACTIVITIES

THE FOLLOWING REPRESENTS A DISTRIBUTION OF STUDENT FEELINGS ABOUT THE VARIOUS COMPUTER COURSE ACTIVITIES:

SCALE

1. BUMMER
2. LIKED A LITTLE
3. OKAY
4. VERY GOOD
5. REALLY GREAT

| SCALE 1 | 2 | 3 | 4 | 5 | STUDENT RESPONSES |
|---|---|---|---|---|---|
| | | | 3 | 7 | MAKING A PAPER TAPE |
| | | 3 | 1 | 6 | LEARNING THE CODE OF A PUNCHED CARD |
| | 1 | | 2 | 7 | MARKING A CODE IN A CARD |
| | | | | 10 | USING THE TELETYPE TERMINAL |
| | 2 | | 7 | 1 | DRAWING A PICTURE OF A COMPUTER |
| | | 1 | 3 | 5 | LEARNING COMPUTER WORDS |
| | | | 1 | 8 | MAKING A COMPUTER SCRAPBOOK |
| | | 1 | 2 | 7 | WRITING A COMPUTER PROGRAM |
| | | | 7 | 1 | COLLECTING NEWSPAPER COMPUTER ARTICLES |
| | | | 3 | 7 | LEARNING ABOUT THE COMPUTER TERMINAL AT THE HENNEPIN COUNTY LIBRARY |
| | | 3 | 5 | 2 | MAKING A FLOW CHART |
| | | | | 10 | FIELD TRIP |
| | | | 3 | 5 | FILM--"THE MARVELOUS CALCULATOR" |
| | | 1 | 1 | 8 | LEARNING HOW INFORMATION GOES INTO AND COMES OUT OF A COMPUTER |
| 3 | 9 | 38 | 85 | | TOTALS |

### INSTRUCTIONAL DIALOGUE FACILITY
### COURSES DONE AT THE TERMINAL

| IMPORTANCE | | | | | | ENJOYMENT | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. NOT IMPORTANT | | | | | | 1. BUMMER | | | | | |
| 2. A LITTLE IMPORTANT | | | | | | 2. LIKED A LITTLE | | | | | |
| 3. AVERAGE IMPORTANCE | | | | | | 3. OKAY | | | | | |
| 4. QUITE IMPORTANT | | | | | | 4. VERY GOOD | | | | | |
| 5. VERY IMPORTANT | | | | | | 5. REALLY GREAT | | | | | |
| | | 1 | 5 | 4 | COMPUT | | | | 4 | 6 | |
| | | 1 | 6 | 3 | HIST | | | 1 | 2 | 7 | |
| | | | 6 | 3 | COMPU2 | | | 1 | 5 | 3 | |
| | | 2 | 17 | 10 | TOTALS | | | 2 | 11 | 16 | |

## PARENT QUESTIONNAIRE SUMMARY

THE FOLLOWING ARE RESPONSES GIVEN TO EACH QUESTION ON THE PARENT QUESTIONNAIRE: (7 OUT OF 10 PARENTS RESPONDED REPRESENTING A 70 PERCENT RETURN RATE.)

1. ALL PARENTS INDICATED THEIR CHILD HAD MENTIONED HIS COMPUTER CLASS AT HOME. ADDITIONAL COMMENTS WERE:

   A. "MUCH CONVERSATION AT HOME. SEVERAL OLDER CHILDREN USED A TERMINAL FOR MATH SEVERAL YEARS AGO AND THERE WAS A GREAT DEAL OF CONVERSATION ABOUT THE PRESENT AND PAST EXPERIENCES WITH COMPUTERS."

   B. "VERY OFTEN AND VERY MUCH INTERESTED."

   C. "EVERY DAY AND FOR MANY DAYS BEFORE HE STARTED."

   D. "NEARLY EVERY DAY SHE HAD A CLASS, SHE WOULD TELL ABOUT IT."

   E. "VERY OFTEN."

2. ALL PARENTS INDICATED USING THE TERMINAL AND THE FIELD TRIP ESPECIALLY CAPTURED THE INTEREST OF THEIR CHILD. OTHER AREAS THAT WERE INDICATED BY OVER HALF THE PARENTS AS PARTICULAR AREAS OF INTEREST TO THEIR CHILD WERE THE FOLLOWING:

   A. MAKING PAPER TAPE
   B. MAKING A COMPUTER SCRAPBOOK
   C. COLLECTING NEWSPAPER COMPUTER ARTICLES
   D. LEARNING ABOUT THE TERMINAL AT THE LIBRARY

   IN ADDITION, A NUMBER OF PARENTS INDICATED MANY OF THE OTHER COURSE ACTIVITIES AS AREAS OF INTEREST TO THEIR CHILD. ADDITIONAL COMMENTS WERE:

   A. "HE WAS INTERESTED IN EVERYTHING CONCERNING THE COMPUTER PROGRAM."
   B. "ENJOYED READING NEWSPAPER AND MAGAZINES LOOKING FOR RELATING ARTICLES."
   C. "PARTICULARLY ENJOYED USING THE LIBRARY TERMINAL."

3. THERE WAS NO INDICATION FROM ANY PARENTS THAT THEIR CHILD HAD A PROBLEM IN A PARTICULAR AREA.

4. ALL PARENTS INDICATED A VERY POSITIVE FEELING REGARDING HOW THEIR CHILDREN FELT ABOUT THE CLASS. RESPONSES WERE:

   A. "VERY ENTHUSED AND INTERESTED."
   B. "LOOKED FORWARD TO IT."
   C. "CURIOUS, EXCITED, PLEASED."
   D. "MUCH ENTHUSIASM FOR THE CLASS AND SADNESS WHEN IT WAS FINISHED."
   E. "EXTREMELY ENTHUSIASTIC."
   F. "SHE THOROUGHLY ENJOYED THE CLASS."
   G. "HE ENJOYED ALL OF IT AND SEEMED TO LIKE HIS TEACHER VERY MUCH."

5. ALL PARENTS INDICATED STRONG POSITIVE FEELINGS FOR HAVING CHILDREN LEARN ABOUT THE COMPUTER. COMMENTS WERE:

   A. "NO QUESTION BUT WHAT IT IS VITAL. FAR AHEAD OF MOST ALL THE ADVANCED (SECONDARY) MATH COURSES IN RELEVANCE TO NEEDS OF THE MAJORITY OF ADULTS."
   B. "YES, IT'S USED IN BUSINESS, EDUCATION AND BY MOST STORES NOW. EVERYONE HAS SOME CONTACT WITH COMPUTERS."
   C. "COMPUTERS ARE USED MORE AND MORE IN EVERY FIELD."
   D. "ABSOLUTELY."
   E. "VERY MUCH. IT WILL BECOME A PART OF EVERYONE'S DAILY LIFE IN THE FUTURE."
   F. "YES, BECAUSE IT IS PART OF THE TECHNOLOGY AGE IN WHICH WE LIVE."

6. ADDITIONAL COMMENTS PARENTS WANTED TO SHARE WERE:

   A. "CREATE MORE AND SIMILAR OPPORTUNITIES TO EXPERIENCE LEARNING."
   B. "I THINK THE COURSE SHOULD BE SUFFICIENTLY LONGER TO INCLUDE A NUMBER OF FIELD TRIPS, INCLUDING THE VARIED USES THAT AFFECT EVERYONE, EVERYDAY AS WELL AS TO GIVE BASIC BACKGROUND OF CONSTRUCTION OF COMPONENTS."
   C. "DOUG ESPECIALLY ENJOYED DOING HIS BOOK REPORT AS SOMETHING EXTRA FOR THE CLASS."
   D. "SHE MENTIONED THE SUMMER CLASS AND WAS MOST INTERESTED IN TEACHING OTHERS."
   E. "SHE IS INTERESTED IN THE POSSIBILITY OF BEING AN ASSISTANT IN THE SUMMER SCHOOL COURSE."

APPENDIX G

## TEACHER QUESTIONNAIRE SUMMARY

RESPONSES TO THE TEACHER SURVEY QUESTIONS ARE SHOWN BELOW. THE NUMBER 1 INDICATES A VERY NEGATIVE RESPONSE. THE NUMBER 5 INDICATES A VERY POSITIVE RESPONSE.

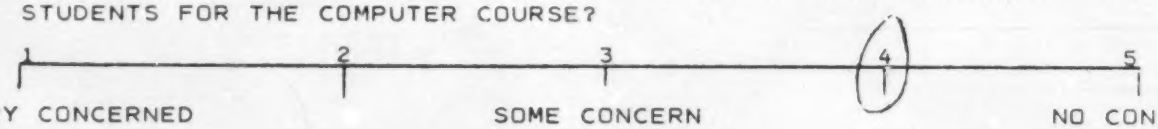
| | TEACHER A | TEACHER B |
|---|---|---|
| 1. HOW DO YOU PERCEIVE YOUR STUDENTS' ENTHUSIASM TOWARD THE COURSE? | 1 2 3 4 (5) | 1 2 3 (4) 5 |
| 2. HOW DID STUDENT MOVEMENT TO THEIR INDIVIDUAL SESSIONS AFFECT YOUR CLASSROOM ACTIVITIES? | 1 2 3 4 (5) | 1 2 3 4 (5) (NO PROBLEM) |
| 3. HOW DIFFICULT WAS IT TO ARRANGE THE STUDENTS' SCHEDULING FOR THE CLASS? | 1 2 (3) 4 5 | 1 2 (3) 4 5 (NO PROBLEM) |
| 4. HOW DO YOU FEEL ABOUT YOUR STUDENTS MISSING CLASS TIME IN ORDER TO TAKE THIS CLASS? | 1 2 3 4 (5) | 1 2 (3) 4 5 (NO PROBLEM) |

APPENDIX H

## PRINCIPAL QUESTIONNAIRE

PLEASE RATE THE FOLLOWING QUESTIONS BY CIRCLING THE APPROPRIATE NUMBER ON THE SCALE.

1. HOW DO YOU PERCEIVE THE TEACHERS' FEELINGS TOWARD SCHEDULING THE STUDENTS FOR THE COMPUTER COURSE?

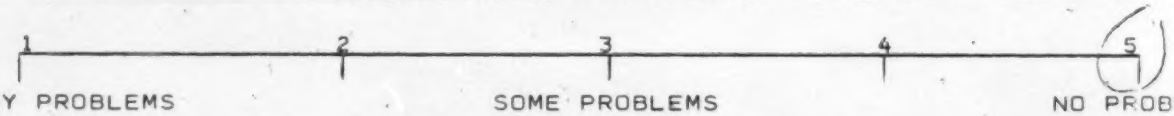



VERY CONCERNED MANY PROBLEMS — SOME CONCERN SOME PROBLEMS — NO CONCERN NO PROBLEMS

PLEASE SPECIFY ANY PROBLEMS_____

_____

2. HOW DO YOU PERCEIVE THE TEACHERS' FEELINGS TOWARD STUDENT MOVEMENT TO THEIR INDIVIDUAL SESSIONS AFFECTING THEIR CLASSROOM ACTIVITIES?

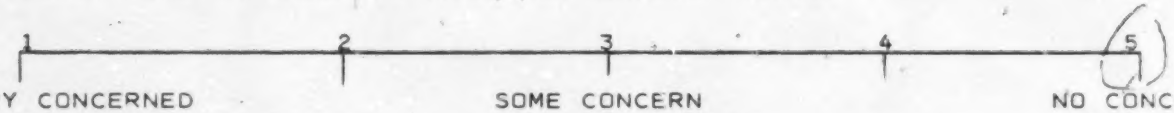



MANY PROBLEMS — SOME PROBLEMS — NO PROBLEMS

PLEASE SPECIFY ANY PROBLEMS_____

_____

3. HOW DO YOU PERCEIVE THE TEACHERS' FEELINGS TOWARD STUDENTS MISSING CLASS TIME IN ORDER TO TAKE THE COMPUTER CLASS?

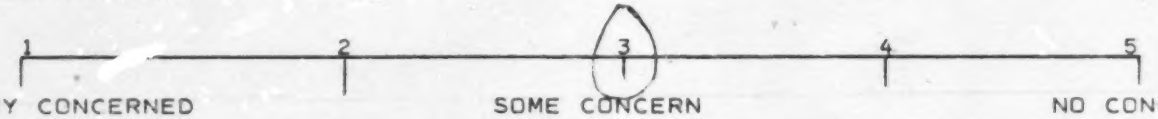



VERY CONCERNED PRESENTED MANY PROBLEMS — SOME CONCERN PRESENTED SOME PROBLEMS — NO CONCERN PRESENTED NO PROBLEMS

PLEASE SPECIFY ANY PROBLEMS_____

_____

4. IN GENERAL, HOW DO YOU FEEL ABOUT THE PROBLEMS THE COMPUTER COURSE PRESENTED?

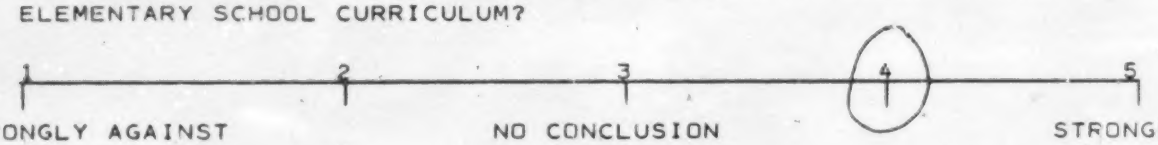



VERY CONCERNED PRESENTED MANY PROBLEMS — SOME CONCERN PRESENTED SOME PROBLEMS — NO CONCERN PRESENTED NO PROBLEMS

PLEASE SPECIFY ANY PROBLEMS_____

_____

5. HOW DO YOU FEEL ABOUT THE PLACE OF COMPUTER EXPOSURE IN THE ELEMENTARY SCHOOL CURRICULUM?




STRONGLY AGAINST — NO CONCLUSION — STRONGLY FOR

COMMENTS_____

6. IS THERE ANYTHING ELSE YOU WOULD LIKE TO TELL ME?